SOME NEW SIPHONAPTERA FROM CALIFORNIA

BY CARROLL FOX

Phalacropsylla cummingi Fox, n. sp.

Figs. I and II

Frons provided with two approximate rows of bristles, an anterior of three weak bristles and a second row of four stout bristles of about equal size, the innermost being placed at the edge of the antennal groove above the vestigial eye. Superimposed genal spines two, the lower longer and broader (fig. 1). Labial palpi reaching almost to the apex of fore coxæ.

Hind coxæ with a row of six spineform bristles (spinelets) on its inner side. Outer side of hind femur with a row of four bristles toward the apex and two or three toward the base, the inner side being without bristles. Hind tibia with three rows of bristles in addition to those placed near the fourth, fifth and sixth dorsal pairs as in *P. paradisea,* giving the appearance of having the bristles on posterior border of tibia in groups of three. First segment of the hind tarsus one-third longer than the second (6.4).

Process of clasper (fig. 2, P) prominent and not divided by a ventral suture; finger extending well above the process, its ventral border convex and provided with thin bristles extending for nearly its entire length; below the middle with a submarginal row of two or three stouter bristles on the inner side (fig. 2, F).

Vertical arm of ninth sternite straighter and wider than in *P. paradisea* and not divided at apex; horizontal arm with a row of bristles on its distal half, the upper three of which are stout, the middle one much the stoutest (fig. 2, IX st). Length, 1.8 mm.

Los Angeles, California, 1925, one male taken off *Diphodomys agilis.*

Type No. 28918, U. S. N. M.

Leptopsylla ebrighti Fox, n. sp.

Figs. III and IV

This new species of *Leptopsylla* is quite distinct from the other American forms.

Genal spines two; three of the bristles in the fronto-marginal row, at the most prominent part of the frons, short, heavy and spine-like. Labial palpi reaching a little beyond the middle of the fore coxæ. Pronotal comb containing about twenty-four spines. Mesonotum about one-fourth longer than the metanotum in both sexes; the bristles on the metathoracic epimerum eight in number arranged

2: 4: 2: in the male, and 3: 3: 2: in the female. Bristles in the posterior row on abdominal tergites II to VI in the female number 15 to 17, in the male about 12. Abdominal sternites IV to VI, each bearing a single row of 8 bristles in the female, 4 or 5 in the male. Seventh sternite in the female slightly incised ventrally, above the incision with a broadly rounded lobe and carrying a row of 12 bristles; in the male with a row of from 4 to 6 bristles. Eighth tergite in the male with 5 lateral bristles, in the female with a submarginal row of bristles and two lateral rows, the anterior containing 4 small and the posterior 6 large bristles (fig. 4). Abdominal sternite VIII of the male without bristles ventrally, produced laterally into a rounded lobe at the apex of which are 2 fairly long and 1 or 2 shorter bristles (fig. 3, VIII st).

Style short and thick, wide at the base and at the middle, but narrow at tip where there is a long bristle, and below this three smaller bristles. Antepygidial bristles 4 (or 5) on each side in the female (in the type specimen 4 on one side and 5 on the other), and 3 on each side in the male (in the type specimen 3 on on side and 2 on the other). Hind femur with some bristles basally and apically but no lateral row; the hind tibia with a row of 8 bristles on the outer side and 4 or 5 on the inner.

Process of the claspers broad at tip, reaching to about the top of the finger (fig. 3, P); the finger almost straight on its dorsal border, widest near the tip, the ventral border carrying three large and several smaller bristles. The finger may be roughly described as having the shape of a right-angle triangle with the apex at the pedicle and the caudo-ventral corner broadly rounded; manubrium slender, acuminate and gently curved upward (fig. 3, F). Horizontal arm of the ninth sternite slightly curved upward, its apex bluntly pointed, its ventral edge convex and carrying six rather long and some smaller bristles (fig. 3, IX st). Length: male, 1.8 mm.; female, 2.8 mm.

Los Angeles, California, July, 1925, a series of males and females obtained from *Neotoma fuscipes*.

Type No. 28919, U. S. N. M.

ANOMIOPSYLLUS CALIFORNICUS Baker 1904

Figs. V and IX

1904, Baker, Invert. Pacifica, I, p. 39.
1915, Rothschild, Ectoparasites, I, p. 45.

Baker's description was based on one female from *Spilogale phenax* taken at Claremont, Los Angeles County, California. The writer has a series of both sexes from *Neotoma fuscipes* and *Spilogale phenax* taken at Los Angeles, California. The male is reported herein for the first time.

Rothschild acquired the type specimen from Baker. Unfortunately, the receptaculum seminis in the type is almost destroyed. Rothschild, comparing a series of *Anomiopsyllus nudatus* which he had from Paradise, Arizona, with the type of *californicus* came to the conclusion that *californicus* was the same as *nudatus*. These fleas are certainly very much alike but there are minor differences in the shape of the receptaculum seminis (fig. 5), and discovery of the male of *californicus* shows Rothschild to be in error when he pronounced *californicus* to be a synonym of *nudatus*.

In both species there are three small spine-like bristles on the finger of the claspers. In *californicus* these are arranged close together in an oblique row near the apex of the finger (fig. 9, F). In *nudatus* they are much more widely separated along the posterior border of the finger, two of them above and one far below.

Hoplopsyllus powersi Fox, n. sp.

Figs. VIII and XI

Labial palpi reaching to about two-thirds of the anterior coxæ. Pronotal comb composed of from 14 to 16 spines; the metepimerum with 9 or 10 bristles in the male (5:4 or 6:4) and 12 or 14 in the female (6:6 or 6:8). Hind femur carrying a row of about 6 bristles on its inner side, the hind tibia a row of about 10 on its outer side; one of the apical bristles of the second hind tarsal segment extends beyond the middle of the fifth segment. Sternite VII in the female has a row of from 14 to 15 bristles on the two sides together, in the male about 4. Sternite VIII in the male bears laterally a group of about 7 bristles; in the female there is a lateral row of 5 (or 6), while apically there is a row of 8 bristles on the outer side and a row of 7 or 8 on the inner side.

Style slightly more than twice as long as broad at base (9:4). Receptaculum seminis distinctly flattened proximally (fig. 8); bristled process of the claspers (fig. 11, P) about one-third longer than wide at the middle (10:15), the toothed process five times as long as wide, exclusive of the tooth (5:25) (fig. 11, P. 2). Length: male, 1.6 mm.; female, 2.3 mm.

Los Angeles, California, 1925, taken on *Sylvilagus bachmani*.

Type No. 28920, U. S. N. M.

Hoplopsyllus minutus Fox, n. sp.

Figs. VI and X

A small flea. Only the female known.

Labial palpi extending to three-fourths of anterior coxæ; maxillary palpi only a little shorter than the labial palpi. Pronotum bearing a comb of 13 spines; metepimerum with 7 bristles (3:4). Hind femur with a row of 5 bristles on the inner side; hind tibia with a row of 8 or 9 bristles on the outer side; longest apical bristle of the second hind tarsal segment extending to the tip of the fifth segment.

Abdominal sternites II to VI each with a row of about 4 bristles; sternite VII carrying a row of 12 or 13 bristles; eighth tergite with a marginal row of 9 or 10 bristles, a submarginal row of 8 and laterally a row of 5 bristles. Style about twice as long as broad at base, carrying one apical and one subapical bristle (fig. 10). The head of the receptaculum seminis almost round (fig. 6). Length, 1.3 mm.

San Francisco, California, 1908, taken on *Sylvilagus bachmani.*

Type No. 28922, U. S. N. M.

EXPLANATION OF FIGURES

1. *Phalacropsylla cummingi,* frons showing the genal spines.
2. *Phalacropsylla cummingi,* male clasping organs.
3. *Leptopsylla ebrighti,* male clasping organs.
4. *Leptopsylla ebrighti,* female, abdominal segments VII and VIII.
5. *Anomiopsyllus californicus,* receptaculum seminis.
6. *Hoplopsyllus minutus,* receptaculum seminis.
7. *Leptopsylla ebrighti,* receptaculum seminis.
8. *Hoplopsylla powersi,* receptaculum seminis.
9. *Anomiopsyllus californicus,* male, ninth tergite.
10. *Hoplopsyllus minutus,* female, terminal segments of abdomen.
11. *Hoplopsyllus powersi,* male, ninth tergite.

NOTE

On October 24, under a band on a large crabapple tree 32 codling moth cocoons were found, 22 of which were parasitized by *Ænoplex carpocapsæ* Cush. In the neighborhood of this tree 32 of the 417 codling moth larvæ collected were parasitized.

In September a number of the chalcids, *Dibrachys boucheanus* Ratz., were reared from a codling moth larva. Apparently, this parasite functions usually as a secondary, for in December it was reared from the larvæ of *Ænoplex carpocapsæ* Cush.

Ephialtes sanguineipes (Cr.) was reared from a codling moth larva on August 8.—Stanley E. Flanders.